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ABSTRACT

The Regional Alliance for Mathematics and Science Education Reform at TERC, one of the 10 Eisenhower Regional Mathematics and Science Consortia, served the Northeast and Islands region from October 1995 through September 2000. The Eisenhower Consortia and the Eisenhower National Clearinghouse (ENC) comprise a national network supported by the U.S. Department of Education to disseminate information about high quality mathematics and science materials and provide technical assistance and professional development for teachers, administrators, and state education officials focused on improving mathematics and science teaching and learning. This end-of-grant report summarizes the Consortium's outcomes during the 5-year period from October 1, 1995 to September 30, 2000. It does not attempt to duplicate the information that can be found in the annual performance reports submitted to the Office of Educational Research and Improvement (OERI) on May 13, 1996, April 27, 1997, May 14, 1998, and April 15, 1999, but presents summary analyses of the work along with data collected through the Consortia and Clearinghouse Descriptive Data System (CCDDS), client surveys and in-depth telephone interviews. (ASK)

The Eisenhower Regional Alliance for School-based Mathematics and Science Reform

Final Performance Report
October 1, 1995 – September 30, 2001

Submitted to:

U.S. Department of Education
Office of Reform Assistance and Dissemination

The Dwight D. Eisenhower Regional Mathematics and Science Education Consortia Program

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TERC®

The Regional Alliance for Mathematics and Science Education
The Northeast and Islands Eisenhower Regional Consortium
5 Year Performance Report
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I. OVERVIEW AND SUMMARY

The Regional Alliance for Mathematics and Science Education Reform at TERC, one of the 10 Eisenhower Regional Mathematics and Science Consortia, served the Northeast and Islands region from October 1995 through September 2000. The Eisenhower Consortia and the Eisenhower National Clearinghouse comprise a national network supported by the US Department of Education to disseminate information about high quality mathematics and science materials and provide technical assistance and professional development for teachers, administrators, and state education officials focused on improving mathematics and science teaching and learning.

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The Northeast and Islands region includes the six New England states, New York, Puerto Rico and the U.S. Virgin Islands. In addition to the wide geographic spread of the region, it also contains a diverse group of school districts including a territorial system (Puerto Rico) where English is not the primary language.

TERC had been a partner in the original three years of the Eisenhower Consortia program and began its work responding to the purposes of the 1995 grant request for proposals:

- Coordinate mathematics and science resources
- Disseminate exemplary materials
- Provide technical assistance and professional development for implementation of teaching methods and assessments

TERC sought to broaden the mission of the consortium, while maintaining continuity of services and building explicitly on past accomplishments. The new Alliance staff was committed to retaining and strengthening the structures for participatory decision making by clients in the region, begun during the previous consortium governance (FY 93 - FY 95): statewide action teams, the consortium Advisory Board, and steering committees overseeing each of the Alliance's regional networks. In addition, the Alliance established a network of K-12 Alliance Schools involved in long-term MST reform.

Throughout the five years of the grant period, the consortium and its Regional Advisory Board evolved a set of regional priorities that responded to the needs of educators across the Northeast and Islands. The original four project goals were to:

- Collect, evaluate, and disseminate resources and expertise to all schools that support the most-needed topics in school-based MST reform
- Designate, support, and study 300 Alliance Schools that plan and execute exemplary MST reform
- Maximize the program's impact by coordinating with and supporting similar efforts in industry, state government, universities, and on the national level

- Develop activities and services that use volunteers or generate their own funding once launched.

In addition, the Regional Alliance targeted four regional priorities that were identified by a comprehensive needs assessment and informed by extensive experience in providing services to the region. The priorities were to:

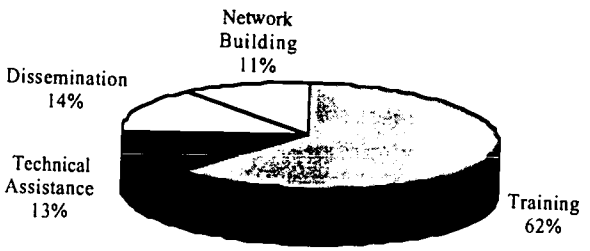
- Support the selection and implementation of standards-based curriculum programs;
- Assist in designing high-quality professional development programs for teachers;
- Guide educators in aligning curriculum, instruction, and assessment;
- Develop leadership skills in teachers and administrators so that schools and districts can sustain improvement efforts.

The Regional Alliance developed a set of 11 performance indicators for the Consortia in collaboration with OERI. All Consortia were expected to measure progress around technical assistance (including professional development/training), dissemination and collaboration. (See GPRA Indicators section) Over the course of the grant period, the Regional Alliance reached almost 13,000 clients with these customized services.

Table 1. Regional Alliance Client Contacts, FY96-FY2000, In-Person Activities

Type of Service	Number of Activities	Number of Clients
Training	268	7,951
Technical Assistance	194	1,695
Dissemination	42	1,841
Network Building	63	1,448
Total	567	12,935

Chart 1
Percentage of Clients Reached by Type of Service



These regional and national priorities were incorporated into a strategic plan adopted by the Regional Advisory Board in September 1998 that guided the work of the Regional Alliance during the grant period. The strategic plan focused efforts in the following areas:

- Build capacity in schools and districts to lead mathematics and science reform
- Work with the Alliance Schools to improve mathematics and science teaching and learning
- Build the region's capacity in mathematics and science reform by reducing duplication, increasing collaboration and improving coordination
- Publicize and disseminate MST resources to educators within the region
- Build the region's capacity in designing and evaluating professional development systems

Throughout the grant period, the Regional Alliance maintained a consistent set of four fundamental structures to accomplish its goals: (1) Alliance Schools Network; (2) Regional Networks; (3) Statewide Action Teams; (4) Electronic and print dissemination. This report describes the accomplishments of the Alliance in these four areas and demonstrates how work in each area contributed to meeting the goals of the strategic plan.

ALLIANCE SCHOOLS NETWORK

Description and Rationale

Over the five year grant period, the Regional Alliance worked with educational leaders across the region to create sustained partnerships in two cadres involving 66 schools committed to systemic education reform. The Regional Alliance worked directly with schools for several reasons:

- School work kept the Alliance grounded in the realities of mathematics and science reform at the local level. We studied the processes of educational reform and collaboration in order to understand the elements necessary for schools to be able to sustain reform efforts beyond their direct involvement with the Alliance.

- School work helped us communicate with state and district leaders what we were learning about effective technical assistance strategies for supporting school improvement.

As members of the Alliance Schools Network, the schools set their own goals for reform, but worked towards those goals in collaboration with the Alliance staff and leaders from other schools in the Network. Having support from a variety of sources gave schools knowledge about research and best practices, access to resources and collegial support. Michael Fullan has identified network-building as one of three "powerful sets of strategies.... (that) seem likely to bring about the changes at the bottom that will be necessary for systemic change to occur." Fullan suggests that networks are strategic because they include ongoing, systemic staff development, multiple ways to share ideas, integration with schoolwide and districtwide priorities, and a commitment to inquiry, assessment of progress and continuous improvement (1996).

The Alliance Schools Network helped school-based leadership teams build their capacity to identify, implement, assess and adapt exemplary mathematics and science instructional materials, teaching methods and assessment tools. With assistance from the staff at the Regional Alliance, schools in the Network examined their curriculum, instruction and assessment practices in light of national and state standards and set goals to improve student learning. A leadership team of teachers and administrators at each school coordinated Alliance activities with other reform efforts at the school. This focus is strongly supported by research indicating that thoughtful local planning and leadership are critical components of reform (National Science Foundation, 1997).

Services to Alliance Schools were client-focused. Alliance staff worked with school-based leadership teams to help them assess their own needs and develop a local improvement plan. Services were also research-based, providing schools with access to research and best practices to achieve their goals. Alliance Schools took advantage of the following types of services:

- Site-based technical assistance in assessing local needs; using data effectively to develop an action plan; identifying, adapting, and implementing high-quality instructional programs

aligning curriculum, instruction, and assessment; designing professional development; and managing change

- Professional development in mathematics and science content, pedagogy, and assessment
- Strategies provided either by Alliance staff or other carefully selected providers
- Training and follow-up in equity programs such as GESA, EQUALS, EMELI, and online courses in gender equity and data use
- Support in establishing collaborative school cultures through sustained and job-embedded professional development such as study or case discussion groups
- Opportunities to network and share learning through regional and sub-regional conferences
- Articles and case studies describing lessons learned from Alliance Schools
- Dissemination of current research and resources through the Alliance Schools listserv, Alliance Access newsletter, a specialized school E-News, and regular resource mailings

Implementation

During the grant period, the Alliance Schools Network collectively received 762 hours of total technical assistance and 1270 hours of professional development. For each school this was:

- An average of 25 hours of technical assistance to each Alliance School: 11 hours of tailored technical assistance to each school over their two years as an Alliance School plus 14 hours of technical assistance from Summer Institutes
- An average of 51 hours of professional development to each Alliance School: 19 hours of tailored professional development to each school plus 32 hours of professional development from Summer Institutes
- Combined average of 76 hours of direct training and technical assistance to each Alliance School

In addition to the tailored technical assistance and professional development each Alliance School received, Alliance Schools were regularly encouraged to participate in Regional Network and SwAT activities. Those who took advantage of such opportunities received many more hours of professional development.

For instance, a dozen teachers and administrators from Bethlehem Elementary School and Lafayette Regional School in New Hampshire each received over 200 hours of professional development and technical assistance from the Alliance, through a combination of direct assistance, tailored professional development, NH statewide action team activities (ICET, school/SwAT networking meeting), and CIA network activities (NH PD series, math cases).

The Regional Alliance hosted summer conferences and sub-regional events throughout the year to provide Alliance Schools leadership teams the collegial support, common experiences and knowledge and skills they needed to lead their school's improvement efforts. Having opportunities to meet educators with similar goals helped the region form a strong network of individuals committed to action and able to call on one another for assistance.

The Regional Alliance recognized the potential of faculty study groups to generate a system for continuous professional development. In an effort to help schools institutionalize the use of school-based professional study groups, the Alliance offered to support a group of schools to implement study groups. Interested schools submitted a proposal describing what the group would study, who would participate, and how and when the group would meet. Five schools were selected and made a commitment to implement the professional development strategy from January through June 2000.

The study groups at each school met for at least two hours a week. Some of the topics they studied were performance assessment, inquiry-based instruction, science curriculum development, and appropriate use of technology in math and science teaching and learning. The groups shared the results of their work with their school colleagues and also with staff from the Regional Alliance and other Alliance Schools.

During a follow-up interview in December 2000, the principal of a Rhode Island middle school highlighted the long-term result of their study group effort. He said,

> The lasting benefit is collegiality. People aren't as possessive as they were; now they want everybody to be successful. The math teachers are still meeting regularly and their meetings have developed into a sort of math mentoring program. They share ideas that work and caution one another about things to be aware of as they implement this new curriculum.

This attitude was echoed by the Math Department Chair at a Massachusetts high school: "They always talked, but now they talk about learning." The members of the high school group found the study group so beneficial that they continued to meet on weekends and without compensation.

As shown in Chart 2, technical assistance tailored to Alliance Schools was most often focused on programs and curricula, to professional development approaches or standards or curriculum frameworks. Assessment and technology were frequently addressed as secondary foci, in the context of programs and curricula.

Chart 3 illustrates that tailored professional development with Alliance Schools most often focused on programs and curricula, technology as well as standards or curriculum frameworks, and assessment.

Chart 2. Alliance School
Technical Assistance Areas of Focus

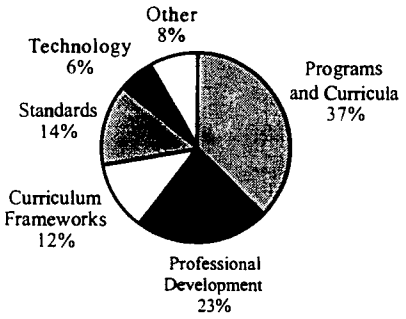
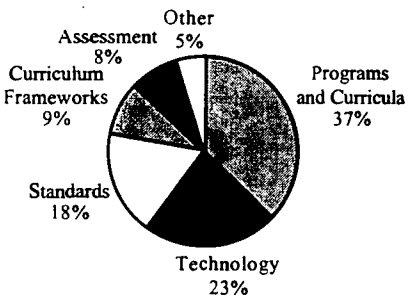


Chart 3. Alliance School
Professional Development Areas of Focus



The District Administrator for a high-need Alliance School district described the work with the Alliance:

> Our school district has received tremendous support from the Regional Alliance over the past three years as an intensive Alliance School site. When we were looking to adopt a new, standards-based math curriculum, the Alliance sent us to workshops that gave us a first-hand look at several math curriculum materials and then prepared a cohort of teachers and staff developers in our district to train the rest of the teaching staff in using and evaluating the Investigations curriculum we adopted. Our staff developers and trainers brought back ideas about what needs to be done in the classroom to effectively get students to understand mathematics.
> *Source: Client Interviews fall 2000*

Quality and Utility

A 1999 survey of Alliance School clients revealed the following data:

Quality of Alliance Services:

- 97% of Alliance school team members surveyed characterized the training and technical assistance they received from the Regional Alliance as moderately or extensively aligned with state or national standards, aligned with high-quality curriculum, and focused on the implementation of practices to attain high standards. (This was consistent with data from the 1998 client survey.)

Impact on Teaching:

- 100% of Alliance school teachers who responded to the 1999 survey reported that the training and technical assistance they received from the Regional Alliance had enabled them to moderately or extensively improve their instructional practices in math or science. (This was an increase of 8% over the data from the 1998 survey.)

- Even more importantly, 100% of these teachers reported that Alliance training or technical assistance had enabled them to moderately or extensively improve student engagement. (This was an increase of 10% over the data from the 1998 survey.)

- 96% reported enhanced student performance in math or science. (This was an increase of 9% over the data from the 1998 survey.)

Impact on School Functioning:

- 97% of Alliance school team members surveyed in the Fall of 1999 reported that their collaboration with the Regional Alliance had moderately or significantly impacted their work in one or more of the following ways: strengthened relationships with collaborators; increased coordination in providing services; increased access to resources; leveraged resources and efforts for greater impact; or generally assisted them in carrying out their work more effectively. (This was consistent with data from the 1998 client survey.)

- 93% reported that the Alliance had moderately to significantly impacted them in all of these ways. (This was an increase of 14% over the data from the 1998 survey.)

Outcomes/Impact

In the fall of 2000, the Alliance conducted in-depth client interviews as part of the national Consortia evaluation process. Five themes emerged from interview responses describing the ways professional development and technical assistance provided by the Alliance impacted teaching practice:

- Reflection and analysis of instructional practice (peer and solo), using standards as guide; increased use of inquiry approach, questioning techniques, "thinking" strategies, non-telling, non-teacher-centered style, group-work, activity-based approach, active learning, hands-on methods

- Clarity about learning goals (awareness of learning objective before lesson or unit)

- Focus on state standards, rather than national (some indication of this being driven by state tests)

- Instruction and assessment are seen as intertwined (assessment analyses driving instructional decisions and/or professional development decisions)

- Questioning techniques, assessment techniques learned in math or science context affecting instruction in other content areas.

The following vignettes are examples of client responses indicating impact:

Improved individual questioning techniques

Alliance School, Grade 7 Teacher, K-8 Public School

> Last Spring I attended a two-day workshop on how to implement case studies in your school. This summer I became in charge of our school's staff-development program, and have begun implementing case studies with all of our teachers, K-8 this fall. Each grade level has given their students a really good, national standard-type math problem, and as a staff, we looked at their work using a nationally-recognized rubric scoring guide, so that

now we have sort of a profile for each kid. Our next step is to use case discussions four to six times over the winter to develop, across the staff, a new way of discussing and examining student work in order to make instructional decisions. Already, I've seen teachers saying "Wow, I looked at this student's work and I couldn't believe what I saw!". In my own classroom, the case study approach has helped me ask different questions. That was the best part of the case discussions for me, was being able to see different ways to ask questions, for students, to find out what they know. And I see the impact this has had on student thinking.

Impact on school and district curriculum instruction, assessment

Alliance School, Grade 6 Public Elementary School Teacher

My school has been an Alliance School for three years. With Alliance support, we have developed and begun implementing a K-6 district science curriculum, and have introduced much more inquiry-based instruction in our elementary classrooms. Without the time spent with the Alliance really getting to know our state standards, it wouldn't be happening. Through a series of five Alliance-sponsored workshops in our first year we were able to really learn how to do inquiry-based instruction.

Increased confidence in science, increased inquiry-based instruction, improved student engagement

Alliance School Public Elementary School Teacher

After attending the Regional Alliance study group workshop, my school team met as a study group over six months, with Alliance support, to focus on developing a science curriculum based on our state standards, which we could then share with the entire district. The study group alone enhanced my understanding of our state standards such that I could become a better science teacher. Science is always one of those things—we call it the stepchild of the curriculum—and in my own classroom I was guilty of that because I tend to favor the writing and language and math aspects, and social studies and science, while they're important, they play a lesser role. Because of my involvement with the Regional Alliance and the study group, science has come to the forefront...I'm not so much afraid of it. And our State standards have really jumped off the page to me because of my involvement in the study groups.

Now in my classroom, we're doing a lot more data collection, we're doing a lot more assimilation of information, we're doing a lot more writing with science, as opposed to just 'Here's the text. Read the chapter.'

Now, science is like a living organism in my classroom. They're not trapped by the book and they can move around. They get to sort and classify and measure and weigh. In past years I've noticed that kids do poorly in science and social studies as a rule because they don't find it interesting. My kids, for the first time in years, couldn't wait to get to science class.

Increased confidence in math, improved student engagement & achievement

Alliance School, Elementary Teacher, Public Elementary School, VT

Over the past two years, as an Alliance School, my school team has received more than 60 hours of professional development, coaching and technical assistance focused on our

> math curriculum and instruction, plus the two, three-day summer institutes. In the first course that we were taught about math, we had to design a specific unit that had to be aligned with the standards and that was really the first time that I've ever had to really look at the Vermont standards and align a unit that I've developed, especially in the math area. I now have a better knowledge base and a lot more self-confidence in teaching math. Using the manipulatives in the classroom definitely engaged the students. I find that they're so much more interested in math and so much more excited about math when you take out the manipulatives and the different types of games.... and the assessment scores, as far as I can see from my last few years when I had not been teaching this math program, have definitely increased. The kids are far better in math now than they were three years ago.

In addition to conducting surveys and in-depth interviews to measure impact, program staff engaged Alliance School leadership teams in reflecting on their status and progress at the beginning and end of their two-year period of intensive services. (Note: Cohort One schools completed both phases of the assessment at the end of their two-year work, describing their beginning position retrospectively.) Using a set of self-assessment rubrics that the Alliance modified from the Education Commission of the States/Colorado State Systemic Initiative, each school team assessed their school's position on a continuum of standards implementation in five dimensions: Curriculum, Instruction and Assessment; Professional Development; Equity; Standards; and Technology Integration. Their self-reflections provide an additional view of the progress each school made toward *becoming* a standards-led educational system through their work with the Alliance.

For each dimension, the continuum of standards implementation was divided into five levels, from maintenance of a non-standards-led system, to predominance of a standards-led system. Since each school began its affiliation with the Regional Alliance at different stages of mathematics and science education reform, it is most useful to speak in terms of change. Both Cohort One and Two schools moved an average of one level toward a more standards-led system. To put this into context, the average Alliance School entered into work with the Alliance at a high awareness and exploration level, and by the end was firmly in the middle of becoming a standards-led system at the transition level. Slightly more progress was assessed in the areas of Standards and Curriculum, Instruction and Assessment than in Professional Development and Equity.

Lessons Learned

Over the five-year period, the Alliance learned a number of lessons about effective work with its school network. A key principle that guided all efforts was that Alliance School work must be systemic, embedded, and connected to student learning. School-based leaders need to see that their reform efforts are connected to and beneficial for students.

There were a number of specific lessons that emerged:

- *Two years is not enough to sustain lasting change*
  Our work with both cohorts of schools clearly indicated that they were just becoming comfortable with the processes of change and reform by the end of their two-year

involvement with the Alliance. Many cohort one schools expressed a strong desire to continue their affiliation and the Alliance made efforts to keep them connected and involved in school activities.

- *In order to create effective reform plans, schools need clear models, high quality examples from real schools and assistance using resources creatively.*
  Schools frequently do not have the time or expertise to identify high quality information, resources and models on which to base their activities. The Alliance's experience and knowledge became an invaluable aid to their reform work.

- *Schools have limited time, attention and resources. The Alliance needed to help them coordinate their network activities with their other improvement efforts.*
  In most situations where participation in the Alliance Schools network was seen as a distinct project, the schools did not have enough internal resources to support competing demands for time and attention.

- *We need to remain flexible to be responsive to changes over time and individual needs of schools.*
  Even over a two year period, many schools experienced significant administrative, organizational and teacher change. This resulted in revised plans and timetables and the Alliance had to adjust its responses and activities to accommodate the changing environments. Imposing a single, fixed model of school improvement did not work for these sites.

- *Leadership development is critical for sustained progress toward reform.*
  Since one of the key structures for Alliance Schools was the leadership team, the Alliance invested the time for a researcher to study the nature of teacher leadership in the network. Below is a summary of the key findings from that research report.

Leadership Research Findings

Leadership teams mobilize colleagues to solve problems they perceive have a significant impact on teaching and learning in their school.
In our research into the function and effects of leadership teams within the Regional Alliance, researchers uncovered a variety of patterns among those teams that proved effective in creating reform. Based upon interviews with thirteen school leadership teams and their principals, the researchers characterized the role of the leadership team in school reform and described several ways that effective teams implemented and sustained reform in their school.

The most successful leadership teams were able to identify a specific challenge or problem that their institution was facing. This problem served as an *enabling condition* that existed in the school, making it ripe for change. Researchers found the problems met these general criteria:

- The problem was one for which teachers had primary responsibility, it related directly to the practice of teaching and learning, and other teachers could share in creating or implementing the solution.

- The problem affected a substantial number of teachers at the school.

- All problems described by the leadership teams had some external focus.

Once the enabling problem was clearly and widely understood, the next step in successful school change depended on the collaboration of activist teachers. Alliance researchers found that the existence of facilitators was critical to the institutionalization of the innovation. Without the catalyzing effect of these people's efforts, the problem may be widely and roundly bemoaned, but never addressed.

What did Alliance activists do? In planning their work, they focused on the development of a solution to the problem. To do this, the successful activist linked research and practice with the problem at hand. The problem provided a point of leverage from which to share expertise and enlist support. The team rarely focused on the innovation, but instead kept the language of reform centered on those matters most appropriate to teachers: teaching and learning. The goal was to have a majority of teachers see the need for the innovation as the logical solution to a schoolwide problem.

Successful Alliance teams built support and understanding throughout the school. Many teams recruited four or five additional teachers to work with them. Other teams involved the rest of the faculty by providing them with information, collecting their feedback, or planning activities collaboratively.

Teacher leaders do not think of themselves as leaders, but as problem solvers.
While the Regional Alliance called the teams of teachers they brought together Leadership Teams, the teachers rarely referred to themselves as leaders. Most teachers did not view their collegial actions as leadership; if they did, they usually viewed all the teachers in the school as leaders.

The actions taken by the teacher leaders on behalf of the team and the school --conducting professional development workshops, presenting before the school board, being recognized as a the point person for a whole school reform activity--appear to be consistent with common notions about expression of leadership. In addition, every principal interviewed perceived the teachers' actions as the work of leaders, which was enough to say that the teachers earned the leader designation. Most teachers, in contrast, identified themselves as teachers and some strongly objected to the title "leader".

The act of defining oneself as a leader is very powerful and meaningful, and has implications for how teachers perceive their role and work in schools. Some teacher leaders articulated a remarkable evolution in their own thinking:

> "Haven't thought of myself as a leader before, but having the title makes you think differently now that I do. It makes me think about modeling behavior, self-reflection, not being so quick to judge others' decisions, trying to develop instruments to help other teachers."

> "We see a leader in school as providing support for grade level and school wide initiatives."

"[My definition] of a leader has changed from having power to working together with others, making group decisions."

Regional Alliance Teachers

In order to keep leadership teams energized and moving, they need time more than recognition. Most teacher teams conducted their meetings on their own time, and many teams met weekly or biweekly. All teams interviewed received some support from their administration in the form of resources, emotional support, informal and formal recognition. One team even won a state award for their work.

Alliance leadership teams came together and focused their energies on a specific problem or problems, and they made considerable progress in solving or addressing these problems. Some teams, in fact, said they would stay together after the support of the Alliance ended. These teams shared one important characteristic: administrators who structured the schedule so that the team met during school hours. Without a purposeful allocation of this most precious resource, time, the teams would probably have faded into memory.

Administrators must recognize that ongoing support is necessary if the teams are to move on to new challenges and new opportunities for school improvement. Time is a precious resource to educators; finding time for school leaders to do their work is critical to effective school reform.

REGIONAL NETWORKS

Description and Rationale

The Alliance supported a series of regional networks in the areas of equity, informal education, K-16 collaboration, and curriculum/instruction/assessment. Networks provided the opportunity for reform leaders to cross state lines, come together to share resources and coordinate services in areas of common concern. Each network was led by a steering committee of local, state and regional leaders. During its annual meeting, the Regional Alliance Advisory Board allocated funds for regional networks and established parameters for how those funds should be spent. In most cases, Network Steering Committees directed Network activities, enlisted Alliance staff support and marshaled other resources to meet their goals. As regional needs changed, the Advisory Board made decisions to discontinue some Network efforts, to pass stewardship of others to various organizations, to expand some efforts and to begin new ones.

Equity Network

Begun in July 1993, the Regional Equity Network and its steering committee remained active through this grant period. In July 1996 the Equity Steering Committee committed to a multi-year initiative to train technical assistance providers across the region to assist local educators in using data more effectively. By developing a regional cadre of experienced professional developers and technical assistance providers, the committee hoped to encourage local educators to improve their use of data, to disaggregate it so that they could identify inequities, and to gather and interpret data as a key aspect of school improvement and equity reforms. The Alliance collaborated with the New England Comprehensive Assistance Center at EDC to co-sponsor a series of Data Strategies Institutes for teams in the region.

Informal Science Network

The Regional Alliance formed an Informal Science Network, known as the Northeast Informal Science Education Network (NISEN) in the fall of 1997. During its first year, the NISEN Board defined a mission statement, identified regional needs and sponsored state-level networking. Since the beginning, MITS, Inc. (The Museum Institute for Teaching Science) has been a valuable partner in coordinating NISEN. Gradually, MITS has assumed more responsibility for facilitating the network and tending to the details of its activities and has become the lead organization.

K-16 Network

The K-16 Network focused on the development of K-16 partnerships in each state/island to support higher education involvement in K-12 MST reform and collaboration among preservice educators. While not all states/islands developed partnerships, several states utilized Alliance support to further their efforts. During the grant period, responsibility for the K-16 Network transitioned to the National Institute for Community Innovations which received a Technology Challenge Grant to create a Virtual PDS Network across the region.

Curriculum, Instruction and Assessment

During the grant period, the focus of the Curriculum, Instruction and Assessment Network changed significantly. By 1996, most states in the region had published their standards

documents and were beginning to deal with accountability issues. In the early years of the grant period, regional CIA leaders wanted help with policy, political issues and research regarding state testing programs. In the later years, the work of the Curriculum, Instruction and Assessment Network focused on supporting state-based initiatives to implement standards-based curricula, increasing regional knowledge about effective professional development strategy and disseminating TIMSS information across the region. At the request of the Advisory Board, the Alliance director collaborated with state math and science supervisors in each state/island to identify the most effective ways to support curriculum implementation efforts. In a particular effort to leverage its resources in the area of CIA, the Alliance began a collaboration with the Center for the Enhancement of Science and Mathematics Education (CESAME) at Northeastern University which had received an NSF grant to develop a network of curriculum implementation centers across the region.

Implementation

Equity Network

- Through 27 activities, the Equity network provided training and technical assistance on topics related to equity and data use to 1,105 educators across the region.
- 81 percent of equity network activities were intensive in length.
- As shown in Chart 5, participants in equity network activities were more varied than in other activities .
- 803 of the 1,105 educators who participated in equity network activities received training in strategies for using data, particularly to uncover and tackle equity issues.

Chart 4. Geographic Scope of Equity Activities

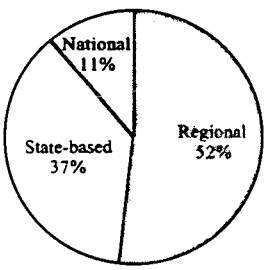


Chart 5. Participants in Equity Network Activities

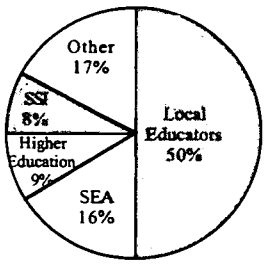


Chart 6. Role of LEAs in Equity Network Activities

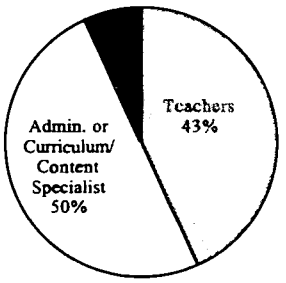
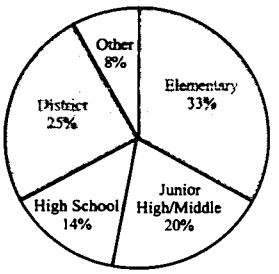


Chart 7. Level of LEAs in Equity Network Activities



In years two, three and four, the Alliance Equity network sponsored a series of regional Data Strategies Institutes. In years four and five, with the completion of the guidebook, *Using Data/Getting Results*, focus shifted to a series of mostly state-based workshops on using data effectively.

Informal Education Network

- The Informal Science Education network conducted 12 activities in the grant period, 8 of which were regional, and four state-based.

- These training and network-building activities provided expertise on programs and curricula to 550 educators, over 80% of whom were informal educators.

- NISEN sponsored 4 annual conferences starting in 1997. These were the largest of the twelve NISEN activities and were attended by more than 115 educators each year, including directors, education coordinators, exhibit developers, and school program coordinators from aquariums, aviaries, botanical gardens, nature centers, observatories, planetariums, museums, science centers, and zoos. The purpose of these conferences was:

    - to provide a networking and professional development opportunity for Informal Science Educators around issues of education reform, and

    - to inform participants about the technical assistance available to them from the Regional Alliance and MITS.

In response to a need for more comprehensive information resources, the Informal Education Online Resource Center was developed in September 1998. This website, part of the Regional Alliance Hub website, is organized according to topics identified by educators at the first informal science conference. The site provided a single place to find curriculum resources; content experts and consultants, especially for program evaluation; accessible practice resources; a listing of other informal institutions and related associations; networking and professional development opportunities; grant-writing aid; and funding sources. A thorough search of current internet sources was undertaken in the creation of this website to ensure that where resources already existed the site did not duplicate them. The online resource center is a complement to the Alliance informal education listserv that provides timely information on these same topics.

K-16 Network

- Through 25 activities in this grant period, the K-16 network provided network-building, training and technical assistance around preservice education, professional development schools and professional development in general, to 1,274 educators across the region.
- 40 % of K-16 network activities were intensive in length.

Chart 8. Geographic Scope of K-16 Activities

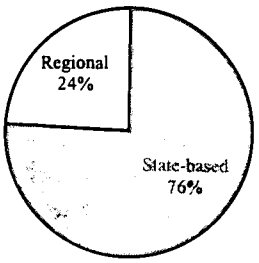


Chart 9. Participants in K-16 Network Activities

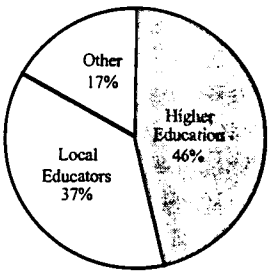


Chart 10. Role of LEAs in K-16 Network Activities

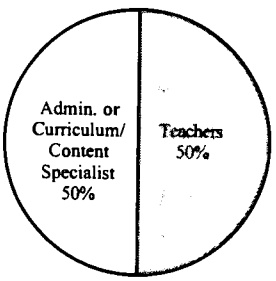
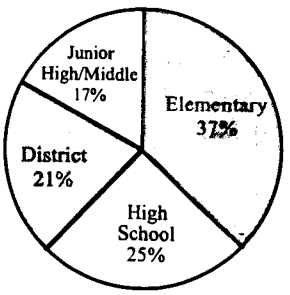


Chart 11. Level of LEAs in K-16 Network Activities



The Alliance hosted or collaborated with other organizations to sponsored a variety of K-16 activities, including:

- Two regional PDS conferences co-sponsored with the University of Vermont PDS Network and the MA PDS Network
- Co-sponsoring three statewide CT PDS conferences with Central Connecticut State University reaching almost 350 educators and supporting the published conference proceedings
- Supporting the development of the NY Department of Education's K-16 Professional Development Network, a partnership of higher education, K-12 schools and the state education agency designed to provide a forum for K-16 partners to plan, link and sustain systemic professional development that will prepare teachers and administrators to assist all students to achieve high standards
- Support and technical assistance to bring Education Trust staff to meet with VI education leaders to explain the merits of forming "Community Compact" partnerships in the VI
- Co-sponsoring a Higher Education Forum for K-16 educators with the Maine Math and Science Alliance

- Supporting the ongoing growth and development of the VT and MA PDS Networks

CIA Network

- CIA network activities provided training and information in standards, programs and curricula and professional development strategies to over 630 clients in the five-year grant period.

- About half of the fifteen CIA activities were intensive in nature; the other half ranged from 6-11 hours in duration.

Chart 12. Geographic Scope of CIA Network Activities

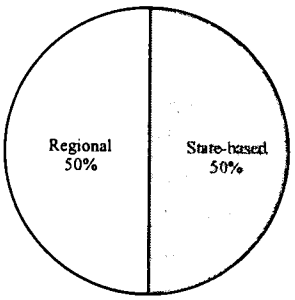


Chart 13. Participants in CIA Network Activities

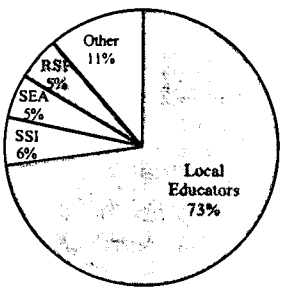


Chart 14. Role of LEAs in CIA Network Activities

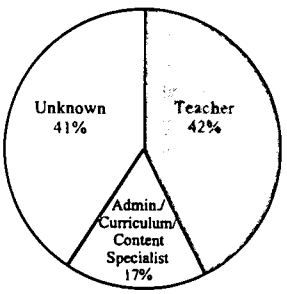
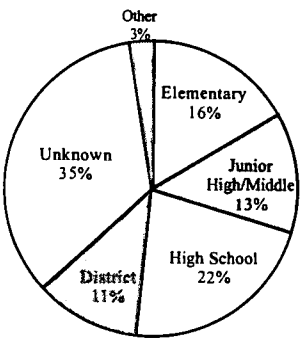


Chart 15. Level of LEAs in CIA Network Activities



Designing Professional Development

Beginning in 1998, the Alliance staff offered extensive training and technical assistance in effective professional development principles and practices to a range of audiences in the region. Sessions were based on the book, *Designing Professional Development for Teachers of Mathematics and Science*, (Susan Loucks-Horsley, Alliance staff member Nancy Love et al) and the two ENC summaries of the book, *Ideas That Work: Mathematics* and *Science*. The Alliance's dissemination work was part of our strategic plan as established by our Regional Advisory Board and part of a larger national effort, coordinated by the National Institute for Science Education (NISE) Professional Development Project, to engage those responsible for designing staff development with current research and best practice.

Interest in both the book and the ENC publication put Alliance staff in the position of responding to requests for professional development and collaborating with key providers in the region. A brief list of presentations included:

- RI Educators of Science, May 1999
- NH Dept. of Education Improving Practice Series, April 1999
- Alliance Schools Institute, June 1998
- National Eisenhower Consortia Retreat, July 1998
- Alliance Informal Science Conference, September 1998 and 1999
- VT Effective Professional Development Conference, October 1998
- PALMS Massachusetts Metro Curriculum Leadership Institute, October 1998
- CESAME Curriculum Implementation Forum, November 1998

TIMSS

The Alliance supported the dissemination of the TIMSS results across the region. Alliance staff attended several U.S. Department of Education workshops on the release of the TIMSS Resource Kit and participated in the cross-Consortia TIMSS training sessions in October 1997. Following that training, the Alliance created a series of TIMSS workshops that could be offered in modular form ranging from two-hour awareness sessions to two-day intensive seminars. Working with the SwATs and the state math and science supervisors, the Alliance organized and presented a series of TIMSS workshops across the region including:

- An intensive two-day TIMSS training for teachers, administrators and higher education faculty from RI

- A one-day TIMSS overview at the VI SwAT's Summer Teacher Institute

- Two one-day TIMSS workshops for the NY Department of Education's Eisenhower Higher Education Professional Development Network

- A two day TIMSS training for the CT SSI professional development network

In addition, the Alliance director provided design support and technical assistance to the NY SSI on the production of a statewide TIMSS teleconference and served as one of the conference panelists. He was also a member of the NRC's Continuing to Learn from TIMSS Committee that produced the report, Global Perspectives for Local Action. The Alliance Professional Development Specialist was a co-author of the Professional Development guide that accompanied the Global Perspectives report.

Curriculum Implementation

During the last two years of the project, the Alliance became active in the area of curriculum implementation. We co-sponsored several regional K-12 *Considering New Curricula* Seminars with EDC's K-12 Math Center and several regional one-day Curriculum Implementation Forums with CESAME.

Quality and Utility

Surveys and interviews with Network Steering Committee members revealed that both steering committee involvement itself and the services offered by networks have added value to the work of steering committee members. The Alliance network activities are seen as providing a unique service in the region.

- 93% of Alliance Network Steering Committee members surveyed in the Fall of 1998 reported that their collaboration with the Regional Alliance had moderately or significantly impacted their work in one or more of the following ways: strengthened relationships with collaborators; increased coordination in providing services; increased access to resources; or leveraged resources and efforts for greater impact.

- A Rhode Island State Department of Education team member explained in the 98 Survey: "The Regional Alliance enables us to work with and learn from our colleagues in other states. This kind of networking is excellent. The TIMSS training provided by the RA provided us with a large number of educators who use these statistics in working sessions with teachers."

- An Informal Science Steering Committee member from a state Department of Education reported in the 1998 client survey that "There was no collaboration between the science bureau at SED and the informal science institutions prior to [Regional Alliance.] Now there is a listserv and heightened awareness regarding the important role informal science groups can play in raising standards. And we have some great educators outside the formal classrooms."

As one Regional Service Provider indicated, the Alliance Networks provided needed expertise to states and providers:

> Having the input of the Regional Alliance staff is very beneficial. Due to their regional role, and connection with the US Department of Education, they have a solid grasp on some of the issues that we haven't had time to wrestle with. I think there's a need for broad education reform issues to be handled by the Alliance. Specifically, to have Alliance staff work with our districts on data was really helpful. There are very few people that have anything of quality to offer around data. We have more data than we could go through in ten million years. So to have an opportunity to have someone help you focus your energies on what is important... No one else is filling that niche. Everyone's screaming to use data, but no one's helping you figure out how.

Source: Fall 2000 Client Interview

Outcomes/Impact

Surveys and interviews revealed that the impact of the Alliance's work is felt in several key areas:

Connecting respondents to other providers in region with expertise
Clients feel that the Alliance opens doors, provides access to expertise on the state, regional or national level that respondents would not have access to otherwise. They indicated that networking and connecting with others in region raises their awareness and helps them to better

do their work. This network of resources is highly valued. In addition, these connections sometimes lead to collaborations between clients, joint work, and creative funding strategies.

Helping to connect respondents in new ways to their own target audiences
Clients reported that collaboration with the Alliance provides opportunities for them to work more with their own audiences, in new ways, around new content -- a direct way in which the Alliance aids clients in achieving their missions.
The Alliance helps in this regard by:

- Providing direct professional development for collaborators' clients on content in which the respondent does not have expertise -- collaborators use this as an opportunity to work with their clients on this new topic; this opens the door to a new type of work
- Providing collaborators with expertise, building their capacity to work with clients
- Providing funds to enable collaborators' work with clients
- Providing additional funds to an effort, extending collaborators' reach to more clients

The following examples of client statements describe the impact of the Regional Networking:

Effective Networking
State Department of Education Science Supervisor

> In my role as Science Curriculum Supervisor at the State Department of Education, I have collaborated with the Regional Alliance for over eight years, since the original proposal was written. The Alliance has been a valuable resource in many ways, especially having access to their expertise, but for me, it's mainly meeting individuals through Alliance activities that has been most useful. In the last couple of years, the Regional Alliance director set up a series of meetings with the Eisenhower Coordinators from all of the states in our region. To me it was a support opportunity when the Eisenhower Coordinators would meet, because we were struggling at a time when we were doing consolidated applications, and none of us were sure what that meant, and there was fear that the science and math professional development piece would be lost in that whole attempt. And so those meetings...were very, very crucial at that time. The knowledge that I got from those meetings, and other regional conferences I've been involved in, all helps me leverage change... and you know, a lot of these leveragings came about through meetings and collaborations with people who participate in the network that the Regional Alliance helps support. [The Alliance] provides me with a resource that I can use to help me gain more knowledge or resources, and for me, that makes me more effective.

Technical assistance broadened repertoire, assisted in work with districts and made connections to new partners
Regional Service Provider

> The technical assistance we've received from the Regional Alliance over the past few years has helped my organization to broaden our repertoire, reach out to new audiences, and forge new partnerships in our work. We had been thinking for some time that we needed to reach the principals, and the Regional Alliance director suggested that we do a

Principal's Institute. That planning assistance and some modest funding gave us the extra kick...to get us to move on something that we had wanted to do but we hadn't proposed in any of our other proposals. The direct service provided by Regional Alliance staff has impacted our work with districts. Observing Alliance staff work with our clients, revealed to us how far behind certain of our districts are that we work with. She stretched them. She really stretched the idea of what professional development can mean...The Principal's Institute helped us tap into principals and administrators in a way that we had not done before and I don't know that we would have without the Regional Alliance.

In addition to new clients, our Regional Alliance collaboration has also introduced us to new partners in the state. They referred us to another organization to provide content at the Principal's Institute, and now we like working together so we want to look for more ways that we can do that. The Institute work has also enabled us to strengthen ties with existing partners. We're now collaborating with a sister organization in another section of the state to hold another Institute that would reach a broader audience of principals. In addition, we're collaborating to go after some extra funding to focus on principals in low-performing districts, and trying to get them on-board.

Professional Development and Technical Assistance improved capacity to work with schools

Regional Service Provider

I have collaborated with and received technical assistance from the Regional Alliance for more than seven years. Sometimes the Regional Alliance assists my organization with planning an event and provides direct service; sometimes they simply provide funding. Last year, Regional Alliance staff conducted a two-day workshop for our district teams on using data. The Data workshop is a good example of how the Alliance has impacted our thinking as well as that of our clients. Working side by side with our districts as they went through the workshops enhanced the way in which we can work with them, and helped us to build stronger relationships with them.

My participation in the data workshop made me think about data and how I use data, or don't use data. It caused us as an organization to start asking some questions about data leading us versus us trying to figure out what to do...Also, it really did increase the quality of conversations we were having with our districts, and frankly, it gave us, as a regional service provider, it gave us a doorway in to help them with those conversations. It was kind of like the workshop was a can opener...The workshop increased the quality of the conversations the school districts were having, teacher to teacher, administrator with teachers, parents and teachers, involving really improving practice, and improving content focus for kids. Looking at their data and experiencing that workshop has certainly influenced the way some districts are now approaching curriculum selection.

Provided access to valued resources and expertise

Regional Service Provider

One of the things the Alliance has done very well in the eight years I've worked with them and received professional development and technical assistance from them, is to help me make connections with other programs across the region. For example, it was through one of the Alliance Schools summer conferences that I had the opportunity to find out about the Continuous Assessment and Inquiry Project in Vermont, which led to

my becoming involved in their project. I went for their training last year, and that has had a tremendous influence in terms of the work that I'm doing now, helping teachers look at formative assessment as a strategy, and deepening their understanding of inquiry and its connection with assessment and instruction. If it wasn't for the Alliance, I wouldn't have had the opportunity to work with that project.

It's the human resources that the Alliance points me toward that I find the most useful. The Regional Alliance has kind of been a conveyor for networking us with other people who are out there doing similar work. For instance, I got to meet C.S. through the Regional Alliance and have been very interested in some of the evaluation work that they've done in the Connecticut Academy. And then, as a result, he sent me some of the tools that they have been using to evaluate materials and to evaluate standards. So that was really helpful to me, to find out what other states were doing and seeing some of the tools and resources that they've developed, that, again, we can't just adopt them and use them here in Maine, but we've been able to look at them and work with pieces to develop similar tools in our own context. It's the Regional Alliance that helps us connect with other people who have some of these tools and resources that can help us do our work better.

Value of collaboration

State-based Professional Development Provider/Consultant

I work with teacher leaders in schools across the state who are responsible for designing ongoing professional development for their colleagues in order to improve their math program. Last spring, I attended a two-day workshop on Case Studies so that I could share that approach to ongoing professional development with the teacher leaders I mentor. I think people need to step back and, regardless of which program they're looking at, be thinking of best practice and examining student work. Case Studies are a way to do that. The workshop was fabulous. It exceeded my expectations. As a participant I was impressed by being simultaneously trained myself in the process and as a participant in it, while being shown how to roll it out and to share it with others. I think that the facilitators were so skillful in making explicit the different roles and ways to participate, engage in the dialogue group. So, anyway, that was great.

It was wonderful to have an opportunity to participate with other professional developers, or people who work on a larger scale than just the school or district scale, from other parts of New England. In that way, the Regional Alliance holds a unique role, in that there isn't a lot out there for support and professional development for the professional developers. You know, it's an isolated bunch. And it's those networking opportunities that make it possible for all of us to do our jobs better.

Lessons Learned

Networking and collaboration are important elements of a regional consortium's portfolio of activities. The Regional Alliance Networks built partnerships and collaborations over the five-year period designed to support broad-based mathematics and science improvement across the

region. The work of building these successful partnerships is informed by a number of lessons learned in the process.

- Key partners have limited time, attention, and resources to invest in networking. The individuals and organizations that collaborate with the Alliance have their own missions and demands on their time and resources. Time requested for networking must relate clearly to the central mission of the partners and be used efficiently.

- The needs of the region are constantly evolving and the work of the networks must adjust to these changing needs. As with our state teams, the Alliance needed to re-examine the focus of its networks to meet emerging needs. For example, the CIA Network shifted from a focus on frameworks to curriculum and instructional leadership as standards implementation proceeded.

- Our impact is greatest when we collaborate with other providers to build sustainable structures. The Alliance is not able to support the continued activity of numerous networks by itself. We can be most effective in two ways: (1) as a catalyst helping to initiate new undertakings and then supporting other organizations to sustain the work (as in our Informal Education Network with MITS); or (2) adding value to the work of other initiatives in the region (as in our CIA Network with the IMPACT Centers from CESAME).

- It is important to articulate principles to guide investments of time and money and establish clear expectations with the partners with whom we are building sustainable structures. The Alliance should not be seen as a general resource, but rather as a strategic partner that has a commitment to a vision of reform and specialized expertise to share.

- We must communicate our plans clearly to partners so they know what work is being planned with their clients and can coordinate efforts. Having networks operating independently of key state and regional reform efforts can lead to fragmentation rather than coordination.

- Our relationship with partners is a reciprocal one in which they benefit from our assistance and their support enables us to work more effectively. Engaging them in the planning and implementation processes early in any undertaking builds stronger working relationships.

- The Alliance is not the sole influence on collaborators for increasing coordination, strengthening relationships, leveraging resources, and informing policy decisions, but it is a critical one. From our regional perspective, we are able to highlight connections that might otherwise not receive attention or priority.

STATEWIDE ACTION TEAMS (SwATs)

Description and Rationale

In each state and island, the Alliance worked with a team of local and state math and science education leaders to assist them in addressing significant needs. Each SwAT was unique in its composition and organization and reflected the specific nature of the state/island. Over 110 state and local education leaders served as SwAT team members and each team met on its own schedule to plan activities and allocate Alliance resources. As part of its responsibilities, each SwAT was expected to support its Alliance Schools as well as coordinate state responses to regional network activities.

At the beginning of each fiscal year, the Regional Advisory Board, composed of two representatives from each SwAT, decided on an allocation for each SwAT to use within its state/island to support improved teaching and learning in math and science. In addition to funding support for professional development activities, other services and supports to SwATs included:

- Providing in-person technical assistance and planning assistance for the SwAT and its members
- Offering professional development and networking opportunities for team members
- Providing professional development sessions at SwAT members sponsored activities
- Assisting in building stronger state networks
- Disseminating timely information and materials
- Connecting SwAT members in new ways to their own "clients"
- Connecting SwAT members to other providers in region with expertise

The landscape of leadership for mathematics and science education improvement in the region underwent substantial changes during the five years of the grant. Two NSF funded State Systemic Initiatives (SSI's) ended their funding cycle and state departments of education in four states reorganized or eliminated their math and/or science supervisor positions. Math and science staff in the states were assigned new or expanded responsibilities that resulted in having less time to organize and coordinate SwAT activities. Despite these challenges, the Alliance maintained a core team in each state or island that connected the consortium to local needs and concerns,

Implementation

During the five-year grant period, each SwAT sponsored a variety of activities aimed at improving mathematics and science teaching in its state/island. Subsequent to the 1998 Regional Advisory Board meeting which established clearer guidelines for SwAT activities, SwATs were strongly encouraged to provide sustained professional development opportunities rather than short term efforts. The following data summarizes the SwAT activities over the period:

- Over the grant period, 88 SWAT-sponsored activities provided training and network building to 2,427 educators across the region.

- Approximately half of the SWAT activities were intensive, lasting longer than 12 hours, while half were one day or less in duration.

- 80% of the training was focused on standards or programs and curricula.

- Of the 2,427 participants in SWAT activities, 84% were local educators: 1,396 teachers, and 468 administrators or curriculum/content specialists.

- SWAT activities reached about twice as many local educators at the elementary level than at the high school or junior high/middle school level. Approximately 10% of SWAT activity participants were at the district level.

Some examples of state-based activities include:

- In FY99, the Connecticut SwAT began a major effort to train a cadre of ENC Ambassadors across the state who would be able to highlight ENC materials and products in professional development sessions they offered. After a pilot year of Alliance support, the Connecticut Academy (SSI) invested significant funds to accomplish this project.

- The Maine SwAT sponsored 10 activities, 6 of which were training, 3 network-building and 1 dissemination. Six of the 10 activities were intensive, lasting from 12 to 60 hours. In all, these activities reached a total of 503 clients in Maine. Most of these clients (77%) were local educators, of whom approximately three-quarters were teachers, and a quarter was administrators. The remaining participants in ME SWAT activities were preservice teachers and statewide systemic initiative or state department of education representatives.

- In the five-year period, the Massachusetts SwAT sponsored 5 training activities, all of which were intensive in nature, ranging from 12 to 60 hours in duration. SwAT professional development was held during summer institutes run by a variety of mathematics and science organizations in the state. The MA SwAT activities reached 101 clients in Massachusetts, almost all of whom were local educators. Approximately half of these local educators were school or district administrators and half were teachers.

- The New Hampshire SwAT completed an equity handbook, *Equity is More Than Coping With Change*, which served as an equity addendum to the state frameworks to complement the other addenda developed in prior years by the SwAT. This handbook was widely distributed and well received by schools throughout the state and has been referenced by equity specialists across the region. The NH SwAT also sponsored a weeklong summer institute for 42 teachers on integrating the use of technology into math and science curriculum.

- The New York SwAT sponsored a series of regional Mentor Teacher Network meetings, attended by over 250 mentor teachers across the state designed to support a cadre of teacher leaders involved in the implementation of NY's Learning Standards curriculum.

- The Puerto Rico SwAT focused its efforts on providing workshops on standards-based instruction for Alliance Schools educators. The SwAT provided a series of workshops for Alliance Schools educators called Standards of Excellence for Teaching Science, Standards of Excellence for Teaching Math, and Standards of Excellence for Teaching Science: Administrator Roles and Points of View.

- The Rhode Island SwAT supported the development of a GEMS (Great Explorations in Mathematics and Science) Network site to provide training for teachers in the GEMS materials. It held a leader's workshop for 45 participants and launched the GEMS Network through a regional education collaborative.

- The Vermont SwAT, coordinated by VISMT (SSI), began a long-term effort to develop statewide math and science leadership at the local school level. It sponsored a series of professional development workshops for administrators on observing math and science classes using the SAMPI observation tool. These sessions reached 166 Vermont leaders, including 117 LEA leaders.

- The Virgin Islands SwAT held annual weeklong summer institutes for mathematics and science teachers. Over the 5 years, a total of 170 VI educators participated in the institutes.

Quality and Utility

- 96% of Alliance Statewide Action Team members surveyed in the fall of 1998 reported that their collaboration with the Regional Alliance had moderately or significantly impacted their work in one or more of the following ways: strengthened relationships with collaborators; increased coordination in providing services; increased access to resources; or leveraged resources and efforts for greater impact. (The number of statewide action team members surveyed in 1999 was too limited to analyze separately).

- In September 1997, the Alliance held a two day professional development and networking conference for members of its statewide action teams. Thirty-five team members attended sessions on professional development, aligning curriculum with standards, equity, and TIMSS; met in role alike groups to share common job concerns; and worked as teams to plan their state agendas for the coming year. Participant feedback for the conference was very positive. 84% said the conference supported their state goals; 92% said that it supported their own professional goals; 95% said the overall value of the conference was good to excellent.

- A Regional Service Provider from Maine expressed a commonly shared perspective on the role of the Regional Alliance: "The [Regional Alliance] plays a vital role in acting as a support and catalyst for m/s/t reform. The network and direct support have been invaluable to statewide reform efforts."
(Source: 1998 Client Survey)

Outcomes/Impact

Client interviews conducted with SwAT members in the fall of 2000 identified several important impacts from involvement in SwAT teams. These included:

- SwAT efforts strengthened state professional development
- SwAT involvement increased coordination within a state
- SwAT involvement made connections to new partners
- SwAT involvement serves as a catalyst for change

The following vignettes from the fall 2000 client interviews provide specific examples of how these outcomes impacted SwAT members and their clients.

SwAT efforts strengthened state professional development

State Science Supervisor, State Department of Education

In the eight years that I've collaborated with the Regional Alliance, they have assisted us in ways that have had a tremendous impact on the services we provide to the school districts in our state. Because of the Alliance, we have been able to provide our state with print resources and comprehensive professional development that we wouldn't have been able to otherwise. The one really significant effort that was most helpful to me was a series of four workshops that we were putting on, that the Alliance director helped us plan and organize, and provided direct services and resources...That had a tremendous impact because we had over half the districts in the state participate in those four workshops. It was phenomenal. It gave them an opportunity to network, but also to coordinate efforts that schools in districts were doing in isolation from others in the same district. The Alliance provided all the districts with copies of the Professional Development book, and the Equity Manual that our Alliance State team created the year before, as well as copies of the ENC Equity CD, and all of the rich resources that come out of the Eisenhower Clearinghouse.

SwAT involvement increased coordination within a state

Manager of Technical Assistance, Statewide Systemic Initiative

The Regional Alliance has been critical in fostering our relationship with the Eisenhower National Clearinghouse and helping to implement a statewide campaign of Clearinghouse access centers, promotions, and educator professional development. They have even facilitated collaboration within the state, as has been the case with our Connecticut Mathematics, Science & Technology Leadership Council. Ongoing technical support from the Regional Alliance has helped this federation of professional associations and other education organizations better coordinate the delivery of resources and professional development services to school districts.

SwAT involvement made connections to new partners

Regional Service Provider

In addition to new clients, our Regional Alliance collaboration has also introduced us to new partners in the state. They referred us to another organization to provide content at the Principal's Institute, and now "we like working together so we want to look for more ways that we can do that." The Institute work has also enabled us to strengthen ties with existing partners. We're now collaborating with a sister organization in another section of the state to hold another Institute that would reach a broader audience of principals. In

addition, we're collaborating to go after some extra funding to focus on principals in low-performing districts, and trying to get them on-board.

SwAT involvement serves as a catalyst for change

State Mathematics Specialist, State Department of Education

I have collaborated with the Regional Alliance for eight years in my role as Math Specialist at the State Department of Education. In my eyes, the Regional Alliance is the vehicle for providing service, or information to the state...They are a catalyst for us to bring about change.

Lessons Learned

As a result of five years of work with state teams, the Alliance staff, SwAT members and Advisory Board reached the following conclusions about the roles and relationships of the Alliance and its SwATs:

- *The role of a regional consortium is to support and enhance, not supplant state efforts.* As a regional entity, the Alliance can not be widely engaged at the local level in any given state. Our work should be closely linked to key state priorities and our activities should leverage existing or planned efforts. In areas where there is a clear need and no provider filling that need, the Alliance can design and offer valuable resources and assistance.

- *A regional consortium must remain flexible in order to be responsive to differing needs throughout the region and change over time.* The Alliance began operating with a set of goals that were developed in 1993. Over the grant period it became apparent that the ways in which these goals could be achieved had changed from the original plan. The Interim Assessment and subsequent strategic plan helped to shape a strategic plan that responded to state and regional needs in a more effective manner.

- *It is important to articulate clear principles to guide investments of scarce resources.* The Regional Advisory Board adopted and modified a set of guidelines and procedures for allocation of SwAT funds. These guidelines enabled SwATs and Alliance staff to operate with greater focus and accountability around the use of funds consistent with the strategic plan and the Advisory Board's intent.

ELECTRONIC AND PRINT DISSEMINATION

Description and Rationale

The Alliance information, communication, and dissemination efforts were anchored by its Hub website, http://ra.terc.edu. The Hub provided Web access to a wide range of resources and services, including listservs and discussion groups; statewide action team and regional network information; Alliance Schools Web sites; and an extensive collection of online resources, MST documents, and links to valuable MST websites.

The Alliance also maintained and supported a number of listserves for information dissemination in curriculum/instruction/assessment, technology, and informal education as well as specific lists for math and science organizations in the region. Some lists were established to support communication among working groups, such as the CESAME Implementation Advisors, and have been used not only for information dissemination, but also for network building, technical assistance, and online discussion forums. Other listservs, such as RA-CIA, are public, with a broad and varied membership of educators interested in receiving timely notice of resources, opportunities and new information pertaining to best practices in curriculum, instruction and assessment in mathematics and science.

The Alliance has published two newsletters: *Alliance Access* provides information about key issues in MST reform, Alliance activities, and resources in math, science and technology; *MST Under Construction* was the newsletter for the Alliance Schools Network. These newsletters were free to interested educators and also can be found on The Hub.

The Alliance made a major investment of resources to develop a guidebook entitled *Using Data/ Getting Results: A Guidebook for School-Based Mathematics and Science Reform Teams*. The handbook's purpose is to support local educators in using student learning and other data to better understand and solve problems they face on the road to MST reform. It includes strategies for monitoring student learning results; overcoming obstacles to equity; sustaining changes in how mathematics and science are taught and assessed; and building critical supports for MST reform such as effective professional development and public engagement. Each chapter contains tools for collecting and analyzing data, annotated resource listings, and vignettes and case studies that make inquiry into MST reform come alive. A major development effort, the guidebook consists of more than 400 pages of text, tools, templates, and resources. Originally distributed by TERC, it has been accepted for publication by Christopher-Gordon Publishers of Norwell, MA.

Implementation

- During this grant period, the Regional Alliance published fourteen issues of *Alliance Access* (three issues each year except year one, which only had two issues).
- In years two and three, the Alliance also produced five issues of a separate publication, tailored specifically to Alliance Schools, called *MST Under Construction*. In the fall of 1998, *MST Under Construction* was incorporated into Alliance Access.

- 88,967 copies of *Alliance Access* and 19,854 copies of *MST Under Construction* were disseminated, for a total of 108,821 copies altogether.

- The Alliance disseminated 38,908 copies of 31 ENC print publications, through targeted mailings to key contacts, conference presentations, response to bulk requests from providers, and through ENC Access Centers across the region.

- Through these same venues, the Alliance has disseminated 5,248 CD-ROMs produced by ENC and Eisenhower Consortia network.

- Over the course of the grant period, the Regional Alliance hosted over 49 listservs as a vehicle for in-time and free information dissemination and a tool to facilitate collaboration and communication.

- Twenty-three of these lists were tracked for reporting purposes. They provided substantive information dissemination and network building to 3,746 subscribers.

- More than 10,000 communications were sent electronically on these 23 lists, during the grant period, making more than 2.5 million contacts with educators subscribed to them, and countless contacts with those who were forwarded the original posting. This is one third more contacts than were made via the Alliance website in the same period.

- At the end of Year Five of the reporting period, the Regional Alliance was hosting 13 substantive listservs, which collectively had 2,726 subscribers.

- The Alliance distributed a total of 1785 copies of *Using Data/Getting Results* before it was handed to a commercial publisher for wider distribution.

Table 2. Summary of Regional Alliance Print and Electronic Dissemination Contacts

	FY96	FY97	FY98	FY99	FY00	FY96-00 Totals
Web	540,000	510,000	375,777	228,498	311,130	1,965,405
List	169,682	261,254	617,336	824,650	712,322	2,585,244
Electronic subtotal (web + list)	*709,682*	*771,254*	*993,113*	*1,053,148*	*1,023,452*	*4,550,649*
Print	16,815	37,591	60,312	34,243	28,088	177,049
Total Dissemination	726,497	808,845	1,053,425	1,087,391	1,051,540	4,727,698

Quality and Utility

At least 86% of survey respondents (86% in 1998 and 88% in 1999), who used products disseminated by the Alliance one or more times, reported that the products contributed moderately to significantly to their work, or added value to their work. In addition, more than 92% of survey respondents characterized Alliance-disseminated products as up-to-date and easy to access.

"The Hub has made me more aware of issues that impact our students (such as equity) as well as informed me about what other schools are working on."
Source: Connecticut teacher, 1998 client survey

"Alliance materials enable me to participate in a variety of professional development activities: workshops, committees, discussion groups, etc. I feel informed about the latest developments and capable of helping others."
Source: MA Professional Association member, 1998 client survey

"The website and listserv are used extensively as pointers to other sources of information on the internet and I consider it my partner in education."
Source: Rhode Island teacher, 1998 client survey

"Newsletters have been especially helpful - every staff member has received one (or a copy) - many discussions have been generated by info enclosed."
Source: Rhode Island teacher, 1998 client survey

"I read and follow up on the articles posted on [the Hub] site. I feel I am much more aware of equity and how it impacts learning for all."
Source: New Hampshire teacher, 1998 client survey

"Many of us have accessed the HUB Regional Alliance website for links to outstanding resources for professional development, research, teaching ideas and materials, etc. It is an outstanding site for the quality of the links represented. "
Source: New Hampshire teacher, 1998 client survey

"The RA Listserv is a tremendously valuable tool for me. It keeps me up to date on issues and trends that apply directly to classroom activities."
Source: Maine Teacher, 1998 client survey

"I use the listserv all the time. I forward information from that to other faculty members, as well. This week I shared the article about helping parents understand math as a way of improving student progress."
Source: New Hampshire teacher, 1999 Client survey

"As an administrator I have been provided with quality information to pass on to colleagues and to staff. From the listserv I often duplicate items and share with others. I appreciate it because I know it is based on high standards for math/sci/tech. Ed.—It is always timely!"
Source: Connecticut School Administrator, 1999 Client survey

"[ENC Focus, Ideas that Work, Teacher Change and Alliance Access] ...have contributed to my understanding of issues; my understanding of what works in reform; materials that I can share with educators; contacts that I can use for further info and ongoing conversation. Listserves [are a] place where I can announce events, resources, etc.; people whom I can refer my questions to for quick and varied responses; place where I

can learn about new opportunities, resources, etc.; place where I can create networks of people."
Source: Maine Professional Development Provider, 1999 Client survey

"The information that the Alliance shares with us enables me to know more so that if, at the state level, the commissioner is asking certain things, then I'm better able to answer those questions."
Source: State Mathematics Specialist, 2000 Client Interview

"I don't know of another organization that has the scope of resources that the Regional Alliance has. I don't know of anybody else that has that. I mean, it's just huge. And also, the fact that I'm constantly getting updates, via email, on what's happening. I think that is just marvelous. And I look forward to reading all of those things and taking advantage of whatever we can possibly utilize. That's another thing that I think is really a big help."
Source: Alliance School Teacher, 2000 Client Interview

A fall 1999 survey of our online listserv subscribers found that 96% of the respondents to our curriculum/instruction/assessment and technology lists rated the information provided as very useful to them in their work. Also, they passed along list information to over 9,000 other educators in their schools, districts, and associations. Recipient comments included: "I use many sources of information on the Web, but yours is one of the best. Up-to-date, best practice information useful to my district."

This was consistent with the spring, 1997 survey that indicated that 96% of list subscribers found useful or relevant postings; 89% shared list postings with colleagues; and 86% felt that the flow of information was suitable.

Main benefits of list membership:
Among respondents, one of the most valued benefits of list membership was the timely nature of material. In addition, respondents felt that the lists saved them valuable time by having the material selected and monitored. Postings described as most useful included information on programs, websites, research, policy, grants and conferences. The lists were praised for high standards, for being up-to-date, and for covering a wide range of issues as well as providing participants with more obscure information than would easily be found on their own. Finally, there was great value placed on networking opportunities and the sense of community found on the lists.

How clients used information from the list to support their work:
Use of list information varied from personal use to professional use. Respondents purchased materials suggested, visited recommended websites, passed along grant information and used material for work on grant funded projects. Critical information was shared with colleagues and distributed at meetings. Research and bibliographies were also circulated and sometimes used in doctoral programs. Information on reform and on math and science education was passed along to other teachers on e-mail as well as those not on-line.

Outcomes/Impact

The following vignettes from the Fall 2000 Client Interviews provide more detailed impact of the value of Alliance disseminated products and resources.

Product development assisted with standards alignment and affected policy

SWAT member - State Science Supervisor, State Department of Education

The Alliance provided support that enabled us to create addenda to our state frameworks and distribute them to all schools in the state. If it wasn't for the small amount of money that the Regional Alliance provided, in terms of helping us put those addenda together, the districts would not have had any context for interpreting those standards. More significantly, it helped us, because of those addenda, identify needs that were required in the preservice preparation of teachers, and as a result of that and lots of other activities, we have new policies now in the state that reflect standards that have been identified in our framework but also standards that have been identified in those addendum.

Resources/Products impacted practice

Regional Service Provider

The consortium has been a great resource to me. They've got a lot of tools and resources that they help me become aware of and use. When there are products that come out from the other Eisenhower Consortia, [the director] is really good at making those available. Specifically, the resources and expertise available at the consortium on professional development and using data have really enhanced the work of my whole organization. I attended a session on professional development at a conference, early on when the professional development book was in draft form. Learning about that book and how it can be used in our organization to design effective professional development was a learning experience for me, which then I was able to take back to our organization. We were able to get the book when it came out in print, and we were able as a staff to design some internal, professional development around the book. And now, I mean, that's our guide. We use that book in all the work we do and that goes back to being introduced to that book through the consortium. And the same thing would be true with the consortium's data book.

The Alliance as a source of needed expertise for states

Statewide systemic initiative staff member

The Consortium is a great source of information funneled from the national level and point-of-contact for the regional level. The Consortium has provided us with information and professional development on TIMSS, the Third International Math and Science Study, effective professional development strategies, and strategies for using data. Some of those were unique materials and if the Consortium hadn't done it, who's to say that it ever would've been done? It's been great to have a nearby partner creating products and services that we can use here, particularly for issues or topics that, frankly, are important, but peripheral enough that we don't get to it; where our state has some difficulty doing it and enough of the states in the area all recognize that we're having trouble, but we know it's important. Somebody needs to do it and it's nice to have that regional entity that can respond to that. The Consortium has done a great job at creating the program, tool or product that fills a need many states have identified, therefore preventing duplication.

Lessons Learned

The following lessons about high quality dissemination practices emerged from our work:

- We attempted to reduce the amount of "blanket dissemination" of key resources. A strong effort was made to link dissemination to a professional development or awareness presentation to maximize the use of the resource. This was not always possible with large-scale dissemination, but worked well in the case of *Using Data/Getting Results* where the book was frequently linked to a workshop or presentation.

- Clients rely on us for high-quality resources. Because of the large amount of information that clients receive, they have come to expect that our resources represent the best materials available. Clients frequently have indicated that information and product dissemination is one of our most important roles.

- Alliance resources and materials are seen as a support and enhancement to local efforts. We should not duplicate or supplant existing materials. Rather we are most effective when we identify areas where there are gaps and strategically work to fill them.

GPRA Indicators Report

Since FY98 the Regional Alliance, along with the other consortia and Clearinghouse, has reported annual progress on a set of quantitative performance indicators developed by the U.S. Department of Education. Although these indicators have undergone several changes since FY98 and are, therefore, not all easily compared across three years, these data provide another perspective on the progress of the consortia during the grant period. Table 3 is an overview of the indicators across the three years for which data were reported, followed by an explanation of variations in performance.

On the 11 indicators listed in Table 3, two were not measured during any of the reporting periods (1.5 and 1.6) by the Regional Alliance. Of the remaining 9 indicators, 6 have been consistently met and far exceeded. Consistently, at least 98% of clients have reported that Regional Alliance technical assistance and training is aligned with standards, and focused on assisting them in implementing the standards; at least 90% reported that Alliance technical assistance and training led to in improvements in their practice and improvements in their students' engagement or performance[1]. Across all three years, almost 100% of consortium activities have involved collaborators, and 97% of clients involved in Regional Alliance teams and networks confirmed that their collaboration had added value to their work, by strengthening relationships, increasing service coordination, increasing access to resources, or leveraging resources. Additionally, more than 85% of all clients surveyed reported that materials and information disseminated by the consortium had contributed to improving their work.

Three of the indicators have not been as consistently met, for a range of reasons. Performance on indicator 1.2, intensity of technical assistance, failed to meet the standard in FY98, then exceeded it in FY99 and dropped somewhat to miss meeting the standard by only 1% in FY2000. The vast difference between FY98 and FY99 largely reflects increased accuracy in data reporting between the two years. Despite increased accuracy in reporting, the structure of the cross-consortia descriptive data system has continued to make it difficult to accurately represent the intensity of some Alliance activities, particularly the most intensive of activities (those with Alliance Schools). Although additional effort must be made to improve performance on this indicator, improvements to the structure of the cross-consortia data system are also expected to more accurately capture the intensity of Alliance work in the future.

The declining performance on Indicator 2.1, volume of dissemination reflects several factors. First, the decrease in print dissemination reflects a strategic decision to focus more on electronic means of dissemination, which are more timely and less expensive to produce than print publications. Electronic dissemination includes both web and listserv communications. As Table 2 shows in more detail, web and listserv volume have increased and decreased at different times, independent of each other, producing great variation from one year to the next. If taken cumulatively, from FY96 to FY00 electronic dissemination has increased 44%, averaging out to 11% per year. Increases and decreases in listserv volume are largely due to the natural variation in the number of listservs requested and used by collaborating partners. Listserv volume increased steadily each year until FY2000, when ownership of several lists was transferred to the

[1] In FY98, 82% of surveyed clients reported improvements in student engagement or performance, but this indicator increased to 95% the following year, perhaps reflecting the time it takes to see improvements at the student level.

collaborating partners who gained capacity to host the lists themselves. The decrease in website activity between FY97 and 98 and FY98 and 99 to a great degree reflects changes in the way in which website activity was reported during that time. As technology and savvy have improved over the years, the consortium has progressed from using a larger, but less meaningful number, to a smaller, but more representative number, to reflect web activity.

Indicator 1.7, which measures the percentage of consortium technical assistance targeted to local educators working with at-risk student populations, was not met. While this reflects an ongoing challenge for the Alliance, the continued decrease from almost meeting the indicator in FY98 to falling far short in FY200, reflects a change in the standard for Indicator 1.7. In FY98, the definition of "at-risk" was that 35% of participants' students be eligible for free or reduced lunch. This standard was increased from 35% to majority (51%) in the middle of FY99, after the Alliance had already selected a second cohort of Alliance Schools to work with through the remained of the grant period, based on the 35% standard. As the new standard was applied gradually in FY99 and fully in FY2000, performance on that indicator decreased correspondingly.

With an improved cross-consortia descriptive data system in development, as well as greater consistency in web reporting and "at-risk" definitions, and revised policies regarding intensity of technical assistance and selection of intensive sites, these difficulties in meeting Indicators 1.2, 1.7, and 2.1 should be addressed in the new grant period.

Table 3
Performance Indicator Results for Years 3-5, FY98-00
October 1997-September 2001

Indicator		Standard	Data Source	FY 1998 Results	FY 1999 Results	FY 2000 Results
1.1	TA[1] aligned with standards	80% of participants report	Survey[2]	✓ 98%	✓ 99%	NA[4]
1.2	TA intensity	60% of activities are 12+ hrs	CCDDS	x 22%	✓ 73%	x 59%
1.3	Intensive TA improves practice	80% of participants report	Survey	✓ 90%	✓ 91%	NA[4]
1.4	Intensive TA improves student engagement/performance	80% of participants report	Survey	✓ 82%	✓ 95%	NA[4]
1.5	Intensive sites improve student scores	Measurable improvement	School/district assessments	NA[3]	NA[3]	NA[3]
1.6	Training of trainers produces training of others	80% of participants report	Survey	NA[3]	NA[3]	NA[3]
1.7	Intensive TA targeted on at-risk	70% of participants report	CCDDS	x 65%	x 57%	x 43%
1.8	Activities involve collaborators	80% of all activities	CCDDS	✓ 99%	✓ 100%	✓ 97%
1.9	Collaboration adds value	80% of team and network members report added value	Survey	✓ 97%	✓ 97%	NA[4]
2.1	Dissemination of resources	10% annual increase in print and/or Web hits	CCDDS	✓ 60% print; 29% electronic[5]	x -43% print; +6% electronic	x -18% print; -3% electronic
2.3	Utility of products	50% of participants report	Survey	✓ 86%	✓ 88%	NA[4]

1. TA in all indicators includes both technical assistance and training.
2. For all survey results, results reflect the percentage of clients who reported "moderate" or "significant" value or impact.
3. The Regional Alliance did not report on these indicators.
4. Interviews conducted in place of a survey in FY00 included too small a sample size to consider for these indicators.
5. Electronic includes both website and listserv activity.

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